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10/727,886	12/04/2003	Nitendra Rajput	JP920030180US1	8810

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EXAMINER
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COLUCCI, MICHAEL C

ART UNIT	PAPER NUMBER
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2609

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/727,886

Applicant(s)

RAJPUT ET AL.

Examiner

Michael C. Colucci

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892) ~
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Response to Amendment*

Applicants amendment filed July 5, 2007 overcomes the following rejection/objection:

- 101 rejection of claims 1-20:
- 102 rejection of claims 1-5, 7-15, and 17-20
- 103 rejection of claims 6 and 16:

### *Response to Arguments*

Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new ground(s) of rejection.

In response to applicants amendment to claims 1, 8, and 9:

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows: (See MPEP Ch. 2141)

- a. Determining the scope and contents of the prior art;
- b. Ascertaining the differences between the prior art and the claims in issue;

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- c. Resolving the level of ordinary skill in the pertinent art; and
- d. Evaluating evidence of secondary considerations for indicating obviousness or nonobviousness.

2. Claims 1, 5-9, 13-15, 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poznanski et al (herein after Poz), US 6397174 in view of Odell US 6668243 B1.

Re claim 1, "Mixed language expressions", Poz teaches the processing of text within natural languages as well as the processing of the text by indexing a bilingual or multilingual dictionary, where a dictionary is functionally equivalent to "history" (Poz Col. 1 line 19-26).

"Storing word equivalency probabilities", Poz teaches the use of a bilingual dictionary containing bilingual equivalencies (Poz Col. 4 line 34-59). Poz also teaches equivalencies based on a unified measure of probability (Poz Col. 6 line 38-45).

"Relating words of a first language and words in at least one other language", Poz teaches a multilingual dictionary, which will have a necessary feature to utilize several languages (Poz Col. 1 line 19-26).

- With respect to the first amendment within the current claim 1:

"Monolingual word history" based on a "mixed language word history", Poz teaches a dictionary composed of monolingual or multilingual text (Poz Col. 1 line 19-26). "Stored word equivalency probabilities", Poz teaches the use of a bilingual dictionary containing bilingual equivalencies (Poz Col. 4 line 34-59).

The amended limitation is construed as a mixed language history where the monolingual and mixed history each contain a history of previous words in a sentence

based word sequence. Poz fails to teach a previous word history within the dictionaries that are composed of a sentence based word sequence. Odell teaches a history entry for each history where there are predicted words where the history entries are stored in a hash table according to the predicted word identifier (Odell col 9 line 24-34). "sentence based word sequence", Odell also teaches single word recognition extended to the case of sentences by allowing connections from the end of words to the start of other word so that language model probabilities, which are based upon the likelihood of one word being adjacent to another (Odell col. 1 line 28-39). Therefore, the combined teaching of Poz and Odell would have rendered obvious the generation of word histories composed of one of more languages each containing a history of words.

- With respect to the second amendment within the current claim 1:

"Monolingual next word hypothesis probabilities", Poz teaches probabilities assigned dependent on the following word within a text, (Poz Col. 6 line 14-17). Poz also teaches a dictionary composed of monolingual or multilingual text (Poz Col. 1 line 19-26).

"Monolingual next word hypothesis probabilities predict a next word in a word sequence", Poz fails to discretely teach of a next word hypothesis probability. Odell teaches speech recognition systems usually require the calculation of likelihoods which must be computed to compare individual word hypotheses and determine the most likely word (Odell col 1 line 63 – col 2 line 14). Therefore, the combined teaching of Poz

and Odell would have rendered obvious a monolingual next word hypothesis probability predicting a next word in a word sequence.

- With respect to the third amendment within the current claim 1:

“Determining a probability of a next word in a mixed language expression based upon the monolingual next word hypothesis probabilities and the stored word equivalence probabilities”, Poz teaches probabilities assigned dependent on the following word within a text, (Poz Col. 6 line 14-17). Poz also teaches a dictionary composed of monolingual or multilingual text (Poz Col. 1 line 19-26).

“Probability of said next word predicts a next word in said mixed language expression”, Poz fails to teach this limitation based upon the next word hypothesis probability. Odell teaches speech recognition systems that usually require the calculation of likelihoods, which must be computed to compare individual word hypotheses and determine the most likely word (Odell col 1 line 63 – col 2 line 14). Odell also teaches language model probabilities as part of a composite model applied to inter-word connections (Odell col. 1 line 28-39). Therefore, the combined teaching of Poz and Odell would have rendered obvious a mixed language (multilingual) probability predicting a next word in a mixed language expression.

Claim 5 has been analyzed and rejected with respect to claim 1. A “corpus” is a collection of linguistic speech or text data, as is a dictionary or word history. When read in light of the specification, the term “parallel” is in reference to equivalencies between two languages.

Claim 6 has been analyzed and rejected with respect to claim 1. Poz teaches of translation from a first language to a second language (such as English to Dutch), where either English or Dutch is a foreign language in relation to one another (Poz Col. 4 line 34-39).

Claim 7 has been analyzed and rejected with respect to claim 5. Claim 5 is more descriptive and further limited than claim 7 as to incorporate the use of probabilities as well as a parallel corpus.

Claims 8 has been analyzed and rejected with respect to claim 1. Claim 8 is the product of the method of claim 1.

Claims 9 has been analyzed and rejected with respect to claim 1. Claim 9 is the product of the method of claim 1.

Claims 13 has been analyzed and rejected with respect to claim 5. Claim 13 is the product of the method of claim 5.

Claims 14 has been analyzed and rejected with respect to claim 6. Claim 14 is the product of the method of claim 6.

Claims 15 has been analyzed and rejected with respect to claim 7. Claim 15 is the product of the method of claim 7.

Claims 19 has been analyzed and rejected with respect to claim 5. Claim 19 is the system of the method of claim 5.

Claims 20 has been analyzed and rejected with respect to claim 6. Claim 20 is the system of the method of claim 6.

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Claims 21 has been analyzed and rejected with respect to claim 7. Claim 21 is the system of the method of claim 7.

**3. Claims 2-3, 10-11, 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poznanski et al (herein after Poz), US 6397174 in view of Odell US 6668243 B1 and further in view of Bahl et al (herein after Bahl), US 4759068.**

Re claim 2, "Monolingual next word hypothesis probabilities", the combined teaching of Poz and Odell teach probabilities assigned dependent on the following word within a text, (Poz Col. 6 line 14-17). The combined teaching also teaches equivalencies based on a unified measure of probability (Poz Col. 6 line 38-45). However the combined teaching fails to teach "summing products" of the former two probabilities. Bahl teaches the state of a machine dependent on the sum of two probabilities (a) and (b) multiplied together. Bahl also goes as far to incorporate the product of a third probability prior to the summation (Bahl Col. 13 line 56-68). Therefore, the combined teaching of Poz, Odell, and Bahl would have rendered obvious the summation of the product of word equivalency and next word hypothesis probabilities.

Re claim 3, "monolingual next word hypothesis probability is a statistical language model", the combined teaching of Poz and Odell teaches next word hypothesis probabilities. However the combined teaching fails to teach that the probability is a statistical language model. A language model such as a Markov model is a type of statistical model. Bahl teaches a Markov model (Bahl Abstract) for phone



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machines as well as the storage of statistical probabilities (Bahl Col. 16 line 19-25).

Therefore, the combined teaching of Poz, Odell, and Bahl would have rendered obvious the establishment of a monolingual next word hypothesis probability defined as a statistical language model.

Claims 10 has been analyzed and rejected with respect to claim 2. Claim 10 is the product of the method of claim 2.

Claims 11 has been analyzed and rejected with respect to claim 3. Claim 11 is the product of the method of claim 3.

Claims 16 has been analyzed and rejected with respect to claim 2. Claim 16 is the system of the method of claim 2.

Claims 17 has been analyzed and rejected with respect to claim 3. Claim 17 is the system of the method of claim 3.

**4. Claims 4, 12, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poznanski et al (herein after Poz), US 6397174 in view of Odell US 6668243 B1 and further in view of Lee et al (herein after Lee), US 7165019.**

Re claim 4, "converting a mixed language", The combined teaching of Poz and Odell disclose the implementation of a equivalency probability but fail to discretely teach the step of converting a mixed language. Lee teaches the handling of mixed-language input of one form into another type of text (Lee Col. 14 line 31-51). Therefore, the combined teaching of Poz, Odell, and Lee would have rendered obvious the use of a

monolingual word equivalence probability applied to the step of converting a mixed language word sequence.

Claims 12 has been analyzed and rejected with respect to claim 4. Claim 12 is the product of the method of claim 4.

Claims 18 has been analyzed and rejected with respect to claim 4. Claim 18 is the system of the method of claim 4.

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

***Examiner's Note***

The referenced citations made in the rejection(s) above are intended to exemplify areas in the prior art document(s) in which the examiner believed are the most relevant to the claimed subject matter. However, it is incumbent upon the applicant to analyze the prior art document(s) in its/their entirety since other areas of the document(s) may be relied upon at a later time to substantiate examiner's rationale of record. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). However, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed...." In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).


***Contact***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Colucci whose telephone number is (571)270-1847. The examiner can normally be reached on 7:30 am - 5:00 pm , alt. Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vu Le can be reached on (571)-272-7332. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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